



Province of Noord-Brabant – Nancy Wester

European Phonotic Roadshow

Provincie Noord-Brabant

To shit or not to shit



Similarity between oil and manure

- Petroleum consists of organic compounds from millions of years ago;
- Manure consists of organic compounds.



Use of oil and manure

- You find oil in fuels, plastics, clothing, medicine etc.
- Manure only as fertilization for agricultural crops;
- Other manure components to soil and air.



Manure is not a Volkswagen

Volkswagen Golf: One market

Approved In One country =
Accepted in all EU countries.



Manure: 28 Markets

Manure, nuclear waste, hospital waste:
complex national and EU legislation



What is manure?

Mixture of 90% water, minerals and organic matter;
Nitrogen, phosphorus, potassium, and magnesium;
Elements such as: iron, zinc, copper, molybdenum, boron and cobalt;
Including hydrocarbon compounds;
Additives such as medicines.

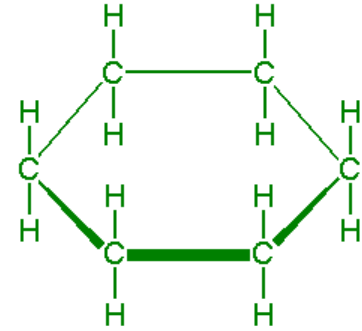
Manure differs

- Per animal species, forage, soil, land.

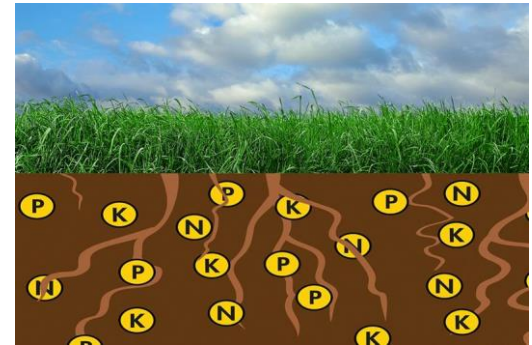
The main part of Manure

- Phosphate: limited stock;
- Most phosphates are absorbed by agricultural crops;
- Part flushes out to bottom and sea;
- Other components unused.

In scientific terms, manure has never been researched.



cyclohexane, C_6H_{12}



Where is the manure?

- In Europe, there are approx. 10 regions with strong livestock;
- Mainly stables with pigs and chickens;
- Covers about 7.5% of the European territory;
- Absorbs more manure than plants;
- Rest of Europe has a shortage of manure;
- Transport between regions is now too expensive;
- Regulation hampers animal manure for fertilizer.



Around 10 Surplus Regions

Similarities: Strong economy and leading educational institutions and institutes.

They possess money and knowledge.

Southeast Netherlands
Brittany
Saxony
Baden Württemberg

Flanders
Catalonia
Bavaria

Denmark
West Poland
Northern Italy

Horizon 2020 Program

Three Topics:

1. Societal challenges;
2. Industrial leadership and
3. Science at the top level.

(1) Societal challenge manure in surplus regions

- Useful raw material for food;
- Pollutes water and soil;
- Affects citizens health;
- Threatens biodiversity.

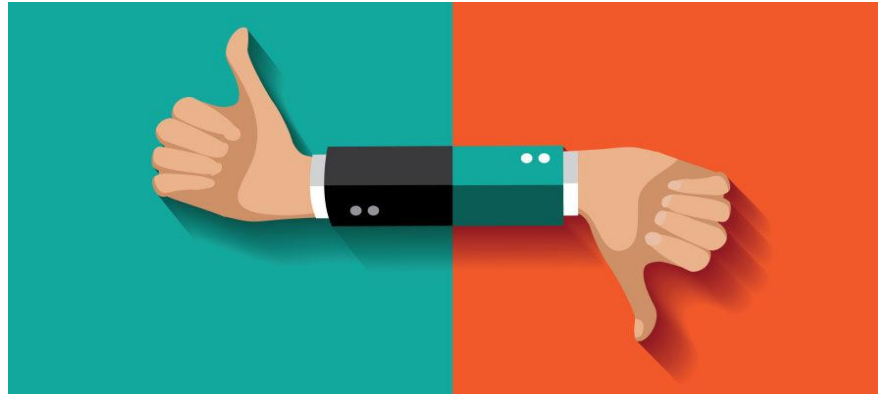
(3) Opportunities for top-level science

Challenge: treat it as petroleum: fundamental research into ingredients



Agree or disagree

- Reuse of manure is necessary to create a circular economy in agriculture;
- Fertilizer replaced by animal manure leads to substantial reduction of CO₂;
- Manure use only for fertilization of agricultural crops is waste of raw materials;
- The dissection of manure is a technological challenge.



What can we do?

- Surplus regions will jointly take control;
- Research fund of € 100-150 million for fundamental and applied research;
- Co-financing institutes, educational institutions, governments;
- Period of 5 years;
- Focused on using all manure ingredients;
- Revenue models where companies create;
- Free tradable Manure Products.

**Challenged to commence a starting document
go-no go?**



Thank you for your attention



Ms. Nancy Wester
Program manager Environment and Health
Department for Nature, Water and Environment
Province of Noord-Brabant
The Netherlands
nwester@brabant.nl